59

A-80-40
IV-F-11

MEMORANDUM

DATE: March 19, 1984

TO: Docket A-80-40
(Arsenic NESHAP)

FROM: Roy Manley
Pacific Environmental Services, Inc.

SUBJECT: Documentation Concerning the Public Workshop
Held August 18, 1983, at Tacoma, Washington

The documents attached were generated or used at the public arsenic workshop held August 18, 1983, at Tacoma, Washington. The following list describes the attached documents:

TO	FROM	DATE	DESCRIPTION
EPA	Public (164 signatures)	August 18, 1983	Sign-in record sheets for workshop attendees
Public	EPA Region X	July 12, 1983	News Release concerning the proposed standards
Public	EPA Washington, D.C.	July 12, 1983	Press Release concerning the proposed standards
Public	EPA Region X	August 1983	Press Release: "Environmental Information" relevant to the arsenic standards
----	----	----	Fact Sheets distributed at the workshop: Arsenic Controls Superfund and ASARCO Risk to Public Health
----	----	----	Diagrams of the smelter process at ASARCO

TO	FROM	DATE	DESCRIPTION
Public	EPA William Ruckelshaus	June 22, 1983	Excerpt of speech presented by William Ruckelshaus to the National Academy of Science
EPA	Public (12 separate letters) (see attached index)	August 1983	Public comment forms completed at or following the workshop
EPA	Public	August 18, 1983	Questions and issues raised during the Tacoma public workshop
----	----	August 18, 1983	Audio tapes of the workshop proceedings (original and complete tapes are kept in the docket in Washington, DC)

Public comments forms received following the close of the workshop August 18, 1983.

Number	Name
IV-F-11a	(b) (6)
IV-F-11b	
IV-F-11c	
IV-F-11d	
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IV-F-11k	
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IV-F-11m	

U.S. ENVIRONMENTAL PROTECTION AGENCY

PUBLIC WORKSHOP

DATE August 18, 1983

LOCATION Tacoma, Washington

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U.S. ENVIRONMENTAL PROTECTION AGENCY

PUBLIC WORKSHOP

DATE AUGUST 16, 1983

LOCATION TACOMA, WA

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PUBLIC WORKSHOP

DATE August 18, 1983

LOCATION Tacoma, Washington

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	Dan Thayer	(b) (6)	PUYALLUP TRIBE
	John Norton		ASARCO
PLEASE PRINT	William Dawson	(b) (6)	ASARCO
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PUBLIC WORKSHOP

DATE August 18, 1983

LOCATION Tacoma, Washington

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PUBLIC WORKSHOP

DATE AUGUST 16, 1993

LOCATION TACOMA, WA

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	Judy H Mitchell	Tacoma WA	HEARC
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PLEASE PRINT	Polly Dorner	(b) (6)	No Pollution
	Pat Lashway		Health & Hygiene

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PUBLIC WORKSHOP

DATE AUGUST 16, 1983

LOCATION TACOMA, WA

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	Tim Nolan	Seattle	GSA/PCA
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	Terrie Coplin	(b) (6)	S Tac. & Citizens
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DATE August 18, 1983

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	NORA WHOBREY		ASARCO
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	Marilyn L. Peddo	(b) (6)	ASARCO Tacoma
	Dean E. Wehobey		ASARCO Tacoma
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SCIENCE, RISK AND PUBLIC POLICY

...EPA is an instrument of public policy, whose mission is to protect the public health and environment in the manner laid down by its statutes. That manner is to set standards and enforce them; and our enforcement powers are strong and pervasive. But the standards we set, whether technology or health-related, must have a sound scientific base.

Science and the law are thus partners at EPA, but uneasy partners. It's a shotgun wedding. The main reason for the uneasiness lies, I think, in the conflict between the way science really works and the public's thirst for certitude that is written into EPA's laws.

...But EPA's laws often assume, indeed demand, a certainty of protection greater than science can provide at the current state of knowledge. The laws do no more than reflect what the public believes and what it often hears from people with scientific credentials on the 6 o'clock news. The public thinks we know what all the bad pollutants are, precisely what adverse health or environmental effects they cause, how to measure them exactly and control them absolutely. Of course, the public and sometimes the law are wrong, but not all wrong. We do know a lot about some pollutants and we have controlled them effectively using the tools of the Clean Air Act and the Clean Water Act. These are the pollutants for which the scientific community can set safe levels and margins of safety for sensitive populations. If this were the case for all pollutants, we could breathe more easily (in both senses of the phrase); but it is not so.

...It will not be easy, because we must now deal with a class of pollutants for which a safe level is difficult, if not impossible, to establish. These pollutants interfere with genetic processes and are associated with the diseases we fear most: cancer and reproductive disorders, including birth defects. The scientific consensus has it that any exposure, however small, to a genetically active substance embodies some risk of an effect. Since these substances are wide-spread in the environment, and since we can detect them down to very low levels, we must assume that life now takes place in a minefield of risks from hundreds, perhaps thousands, of substances. No more can we tell the public: you are home free with an adequate margin of safety.

This worries all of us, and it should. But when we examine the premises on which such estimates of risk are based, we find a confusing picture. In assessing a suspected carcinogen, for example, there are uncertainties at every point where an assumption must be made: in calculating exposure; in extrapolating from high doses where we have seen an effect to the low doses typical of environmental pollution; in what we may expect when humans are subjected to much lower doses of the same substance that caused tumors when given in high doses to laboratory animals; and finally, in the very mechanisms by which we suppose the disease to work.

Excerpts from a speech by William D. Ruckelshaus, Administrator, Environmental Protection Agency, to the National Academy of Sciences on June 22, 1983.

Further, we must search for ways of describing risk in ways the average citizen can comprehend. Telling a family living close to a manufacturing facility that no further controls are needed on the plants's emissions because, according to our linear model their risk is only 10^{-6}, is not very reassuring. We need to describe the suspect substances as clearly as possible, tell people what the known or suspected health problems are and help them compare that risk to those with which they are more familiar.

To effectively manage the risk, we must seek new ways to involve the public in the decision-making process. Whether we believe in participatory democracy or not it is a part of our social regulatory fabric. Rather than praise or lament it, we should seek more imaginative ways to involve the various publics impacted by the substance at issue. They need to be involved early on and they need to be informed if their participation is to be meaningful. We will be searching for ways to make our participatory process work better.

For this to happen, scientists must be willing to take a larger role in explaining the risks to the public--including the uncertainties inherent in any risk assessment. Shouldering this burden is the responsibility of all scientists, not just those with a particular policy end in mind. In fact all scientists should make clear when they are speaking as scientists--ex cathedra--and when they are recommending policy they believe should flow from scientific information. What we need to hear more of from scientists is science...Our country needs the clear unbiased voice of science.

...Lest anyone misunderstand, I am not suggesting that all the elements of managing risk can be reduced to some neat mathematical formula. Going through a disciplined approach can help. It will assist in organizing our thoughts to include all the elements that should be weighed. We will build up a set of precedents that will assist later decision-making and provide more predictable outcomes for any social regulatory programs we adopt.

It is clear to me that in a society in which democratic principles so dominate, the perceptions of the public must be weighed. Instead of objective and subjective risks, the experts sometimes substitute "real" and "imaginary" risks. There is a certain arrogance in this -- an elitism which has ill served us in the past. Rather that decry the ignorance of the public and seek to ignore their concerns, our governmental processes must accomodate the will of the people and recognize its occasional wisdom. As Thomas Jefferson observed:

> "If we think (the people) not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion."

A FACT SHEET

SUPERFUND AND ASARCO

WHAT IS SUPERFUND?

Superfund is the Federal program that allows EPA -- with the participation of State governments -- to respond directly to releases (or threatened releases) of hazardous substances and pollutants or contaminants that may endanger public health or welfare. The program was set up by the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The law is referred to as "CERCLA", or, more popularly, as the Superfund law because it created a $1.6 billion fund to deal with problems resulting from hazardous materials in the environment.

HOW DOES SUPERFUND COME INTO PLAY?

In April 1983, the Washington Department of Ecology (DOE) signed an agreement with EPA that called for DOE to lead a $1.4 million EPA-funded investigation of contamination by hazardous chemicals in an area described as the Commencement Bay Nearshore/Tideflats area. The area includes Ruston, site of the ASARCO smelter. A sum of $100,000 will be devoted to investigate contamination in Ruston, Maury Island and Vashon Island. Soils in those vicinities are known to contain arsenic and cadmium in amounts that have prompted the Tacoma-Pierce County Health Department and the Seattle-King County Health Department to issue warnings about the consumption of garden vegetables grown in contaminated soils.

WHAT IS THE OBJECT OF THE SUPERFUND INVESTIGATION?

The investigation, to be managed by DOE and the Tacoma-Pierce County Health Department, will attempt to establish the pathways by which arsenic finds its way into the urine of school children. There are a number of suspected pathways: household dust, windblown dust from unpaved lots and roads, vegetable intake, playground soil and smelter emissions. DOE and the health department will attempt to determine the most significant pathways. According to the current schedule, the investigation should be completed by November 1984. Once the pathways are established, EPA has the authority to order the source of the contamination, if known, to take corrective action that will eliminate the risk to health. If a source of the contamination refused to undertake the clean-up, EPA has the legal authority to do the job itself with the understanding that all costs incurred must be repaid to EPA by the source.

WHAT IS SUPERFUND'S RELATIONSHIP TO THE PENDING EPA PROPOSAL?

The pending EPA proposal to place new restrictions on arsenic emissions from ASARCO is separate from the Superfund program, although the two have similar goals. The proposal has as its objective the reduction of arsenic from current and future smelter emissions. The Superfund program is directed toward reducing the health and environmental risks posed by the historic build-up of arsenic in the soil.

Until the joint DOE-health department Superfund investigations are completed, what should or can be done to remedy the historic deposit of arsenic in the soils will not be known. Any cleanup action, however, will be planned with the help of the public. An advisory group is being formed, and will begin meeting soon. For more information about the public's involvement with Superfund activities, contact Derek Sandison of the Tacoma-Pierce County Health Department at (206) 593-4750.

A FACT SHEET

THE RISK TO PUBLIC HEALTH

Arsenic, in its inorganic form, has long been known as an acute poison to humans when ingested in relatively large amounts. However, more recent data have shown that exposure to lower levels of arsenic results in skin and lung cancer in humans. For cancer-causing substances, such as inorganic arsenic, scientists are unable to identify a safe level of exposure. Therefore, EPA and other federal agencies have taken the position that cancer may occur at any level of exposure to arsenic no matter how low, with the risk of cancer increasing as exposure increases.

For the purpose of developing its arsenic regulation, EPA has determined that the ASARCO smelter should be controlled at a minimum to the level that reflects best available technology (BAT) and to a more stringent level if necessary to prevent health risks that are unreasonable. This approach requires that EPA estimate the cancer risk remaining for the population after these controls are in place and then determine if the remaining cancer risk is acceptable, taking into account the costs and technical feasibility of reducing the risk further.

To calculate this remaining risk, EPA combined data from two different types of analyses. The first analysis provides what is known as the unit risk number. This number is defined as the lifetime lung cancer risk that would occur in a population which is exposed throughout their lifetime to one microgram per cubic meter of arsenic in the air they breathe. (A microgram is equal to about 1/28 millionth of an ounce and a cubic meter is about the same as a cubic yard. Therefore, one microgram per cubic meter is about 1/28 millionth of an ounce of arsenic in a cubic yard of air.) This unit risk number is calculated by using data from studies of workers who were exposed to arsenic in smelters and at a pesticide manufacturing plant.

The second analysis estimates the exposure for residents living near the smelter. This is done with mathematical models. Utilizing data on emissions of arsenic from the ASARCO smelter as well as information on weather and geographic conditions, a dispersion model is used to calculate the concentration of arsenic expected at over one hundred locations within approximately 12 miles of the smelter. Combining these exposure estimates with population data from the Bureau of Census gives an estimate of the number of people exposed to various concentrations of arsenic within about 12 miles of the smelter. This 12 mile distance was chosen because the mathematical models used tend not to be as accurate at a greater distance. (While our analysis stops at about 12 miles, it must be realized that risk from exposure to arsenic emissions extends beyond this distance, though at a reduced level.)

By multiplying the unit risk number and the estimated exposure for people living around the smelter, it is possible to make an estimate of the cancer risks expected in the ASARCO community as a result of arsenic exposure. For those people living within one mile of the smelter, the lifetime cancer risk remaining after controls have been installed would be about 0.2%. This is in addition to the normal lifetime cancer risk of about 20% that would be expected without arsenic exposure. Within the 12 mile area this excess life- time cancer risk, after controls are installed, would be 0.004%. Another way of expressing this risk is by using lung cancer incidence numbers. Lung cancer incidence is the expected number of lung cancer cases that would result each year from arsenic exposure within 12 miles of the smelter. Without additional controls, the estimated lung cancer cases are approximately 4 per year. After the proposed controls were installed, the estimated number would drop to approximately one per year. To keep this in perspective, these numbers should be compared to the several hundred lung cancer deaths that are normally expected each year in a population the size of that found within this 12 mile radius.

UNCERTAINTIES IN RISK CALCULATIONS

The process of calculating these risks for the population around the smelter involves many assumptions and uncertainties. So while these estimates of risk are a useful tool in the decision-making process, MUCH CAUTION SHOULD BE EXERCISED TO AVOID RELYING TOO HEAVILY ON THE NUMBERS PRESENTED ABOVE. These numbers have considerable uncertainty for the following reasons:

1) MODELING ASSUMPTIONS - Measurement of air concentration of arsenic around the ASARCO plant have not been done thoroughly; however, the measurements that have been obtained indicate lower concentrations than those predicted by the dispersion model. Arsenic emissions data from the smelter used in the dispersion model are not precise. In many cases these emission rates were based on assumptions rather than actual emission tests. This is especially true for fugitive emissions which are very important in calculating concentration yet are very difficult to measure. Also, estimates of how these arsenic emissions mix with the ambient air are hard to determine because of the complex geography and lack of specific weather data for the area around the smelter. These problems may explain why the ambient monitoring around the smelter shows lower concentrations of arsenic than EPA's dispersion model predicts.

2) EXPOSURE ASSUMPTIONS - A principal assumption is that all persons living within the 12 mile radius of the smelter will remain in the same location for a 70 year lifetime and are exposed to a constant, average concentration of airborne arsenic. This assumption could result in large overestimates of arsenic exposure for those who spend a lot of time away from their residences and in underestimates for workers employed at the smelter. Additionally, exposure to arsenic from resuspension of arsenic bearing dusts from city streets, empty lots, and playgrounds has not been taken into consideration.

3) UNIT RISK NUMBER - Because arsenic is a carcinogen, it was assumed that a linear relationship exists between exposure and risk. Simply stated, this means that a person who inhales one microgram of arsenic per cubic meter of air is one-tenth as likely to get cancer as a person who inhales ten micrograms per cubic meter. If the relationship between exposure and risk is not linear, a different unit risk number could result which would in turn change the lung cancer risk estimates made for the population around the smelter. It is unlikely that the actual cancer risks would be higher than those predicted by EPA, but they could be substantially lower.

EPA is now in the process of reviewing the data used in calculating risk estimates, especially those data which relate to arsenic emissions and dispersion modeling. If necessary, new data will be developed in these areas to permit EPA to better estimate risks to the smelter community.

A FACT SHEET

ARSENIC CONTROLS

WHY THE SPECIAL ATTENTION FOR ASARCO'S TACOMA SMELTER?

The ASARCO smelter in Tacoma uses copper ore concentrate with a much higher arsenic content than any other U.S. copper smelter. Arsenic makes up about four percent of the ore at Tacoma; no other copper smelter uses ore concentrate with more than 0.6 percent.

Arsenic is a commercially valuable by-product of the Tacoma operation. The smelter is the only U.S. manufacturer of arsenic and arsenic trioxide; it produces one-third of all arsenic used in the country.

WHAT IS EPA PROPOSING FOR THE TACOMA SMELTER?

There are three principal phases in the smelting process that transforms raw ore into blister copper. (1) The ore is first run through a roaster as an initial step in gradually removing impurities. (2) What emerges from the roaster is run through a reverberatory furnace. (3) The molten mixture from the furnace is then sent to converters. EPA seeks to reduce the emissions of arsenic that escape capture in the third step, e.g., the converting process.

EPA is proposing that additional hoods be placed on the converters so that ASARCO would capture and collect "fugitive" arsenic given off during this third stage in removing impurities from the copper.

The EPA proposal would include a standard expressed in terms of equipment specifications for the collection device. The criterion used by EPA in designing this standard is what is called the "Best Available Technology", or BAT. BAT means the best controls available considering economic, energy, and environmental impacts. BAT is the minimum level of control which EPA would require for hazardous air pollutants such as arsenic.

IS THE PROPOSED "BEST AVAILABLE TECHNOLOGY" INDEED THE BEST ASARCO CAN DO?

One of the chief issues during the public hearing/public comment process is whether EPA's proposed standard does, in fact, represent the very best control technology available to ASARCO. Are there other operations or practices at the smelter where additional control can be employed to reduce emissions of arsenic?

There have been discussions among air pollution control engineers involved in the ASARCO-arsenic issue that other measures may exist which can be applied to produce even greater reductions in ASARCO's arsenic emissions. One example which has been suggested has been baghouse controls on the reverberatory furnaces which may play a major role in reducing the amount of arsenic which now escapes.

Other suggestions have been made that ASARCO may be able to reduce fugitive emissions throughout the smelter and that consideration be given to require ASARCO to use ore concentrate with a lower arsenic content. The feasibility of such requirements and the quantification of emission reduction and cost is the subject of an ongoing EPA task force effort. Comments from the public are encouraged and welcomed.

WHAT WOULD EPA'S PROPOSED CONTROLS COST ASARCO?

EPA has estimated that it would cost ASARCO $3.5 million to install the hooding equipment required by the proposed controls, and that the annual cost to operate the equipment would be $1.5 million. Operation of the equipment is expected to increase the smelter's annual energy consumption by one-half of one percent over the 2.9 billion kilowatt hours of electricity the smelter now uses each year. EPA has estimated that its proposed controls could result in an increase in the price of copper by approximately 0.8 percent if the company chose to maintain its normal profit margin. The cost may be higher if additional or alternative controls are found to be necessary.

IS SHUTDOWN OF THE SMELTER A POSSIBILITY?

Yes, it is a possibility.

Regulation of hazardous air pollutants such as arsenic is required by Section 112 of the Clean Air Act. The only absolutely safe approach to setting standards for substances which cause cancer would be to set a standard that would reduce the emissions to zero. In setting standards previously for two other cancer-causing air pollutants, asbestos and vinyl chlorides, EPA promulgated standards that did not require shutdown of facilities that released those pollutants to the ambient air.

EPA can impose standards that go beyond Best Available Technology if, in the language of the statute, it is necessary "to protect the public health....with an ample margin of safety."

United States
Environmental Protection Agency
Region X (M/S 605)
1200 Sixth Avenue
Seattle, WA 98101

News Release

83-51

Contact: Bob Jacobson
(206) 442-1203

July 12, 1983

FOR RELEASE AFTER 1 P.M. (PDT), TUESDAY, JULY 12

Today's proposal by the U.S. Environmental Protection Agency to curtail emissions of inorganic arsenic at the ASARCO smelter in Tacoma triggers a comment period during which the public will have an important role in determining exactly what level of pollution controls will provide "an ample margin of safety to protect public health," according to Ernesta B. Barnes, EPA's Northwest regional administrator.

"That phrase -- 'an ample margin of safety' -- is the critical issue in the upcoming public comment period on the EPA proposal," Barnes said. "In making the proposal, EPA is openly acknowledging that our proposed controls for ASARCO will not eliminate risks to health, but will only reduce them.

"The question facing citizens affected by the ASARCO arsenic emissions is whether the reduced health risk is acceptable."

Inorganic arsenic is a probable carcinogen, said Barnes, and therefore can be assumed to present risks at any level of exposure. There is no defined threshold at which risks begin to occur. EPA's policy toward such non-threshold pollutants is that -- as a minimum requirement -- their emissions be reduced by the best control technology available.

(more)

Barnes also said that EPA will go beyond that minimum criterion of "best available control technology" if necessary to prevent an unreasonable risk to public health.

"During the upcoming public comment period, EPA is encouraging people within the 12.5 mile radius of the smelter to help decide what is an 'acceptable' or 'reasonable' health risk," Barnes said. "In addition, EPA will be soliciting the comments of knowledgeable parties -- ASARCO officials and employees, the engineering community, State and local air pollution control agencies -- who are in the best position to tell EPA whether our proposal does, indeed, represent the best available control technology."

The EPA proposal calls for ASARCO to place hoods on the converters used in the smelting process, a move that would cost ASARCO an estimated $3.5 million in installation costs and an estimated annual operating cost of $1.5 million. Use of the hoods is expected to reduce ASARCO's annual emissions of inorganic arsenic from 310 tons to 189 tons.

"Does that requirement constitute the very best control technology available to ASARCO? -- that's what we want to learn during the comment period," Barnes said. "Are there other operations or practices at the smelter where further controls can be employed to reduce emissions of inorganic arsenic?"

Barnes added that ASARCO's ongoing emissions of inorganic arsenic may be only part of the public health risks faced by people living downwind from the smelter.

"Public health officials are concerned by the deposits of arsenic over the years," Barnes said. "Even with future decreases in the amount of arsenic from ASARCO, arsenic concentrations in the soil surrounding the smelter will remain high."

Barnes said the public hearing on EPA's proposal will be held from noon to 10 p.m. on Tuesday, August 30, in the Rotunda Room of the Tacoma Bicentennial Pavillion at 1313 Market Street.. A second day of hearings will be held, if necessary, at the same location on the following day.

Between now and then, Barnes said EPA will conduct public workshops, probably in early August, to acquaint people in Tacoma and nearby Vashon and Maury Islands with details of the EPA proposal and to help them prepare testimony for the hearing. Times and places for the workshop will be announced as soon as arrangements are made.

More information about the hearings and the workshops may be obtained from Laurie Kral, Air Programs Branch (Mail Stop 532) EPA, 1200 Sixth Avenue, Seattle 98101, or by calling her at (206) 442-1089.

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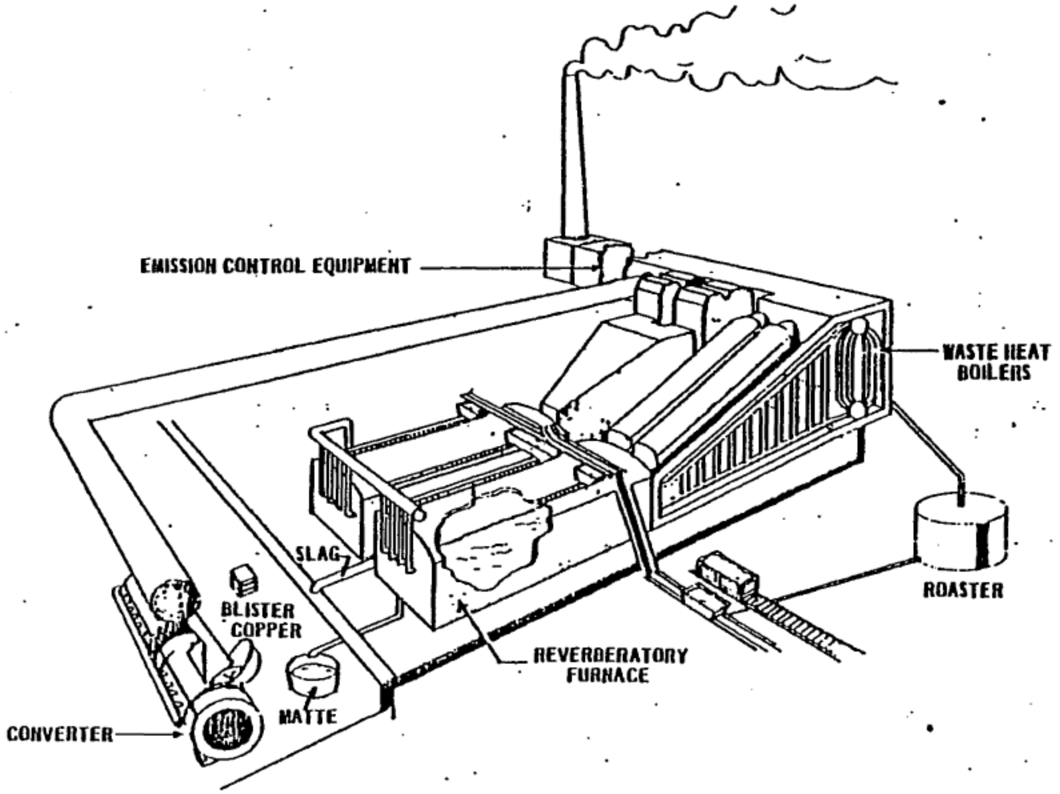
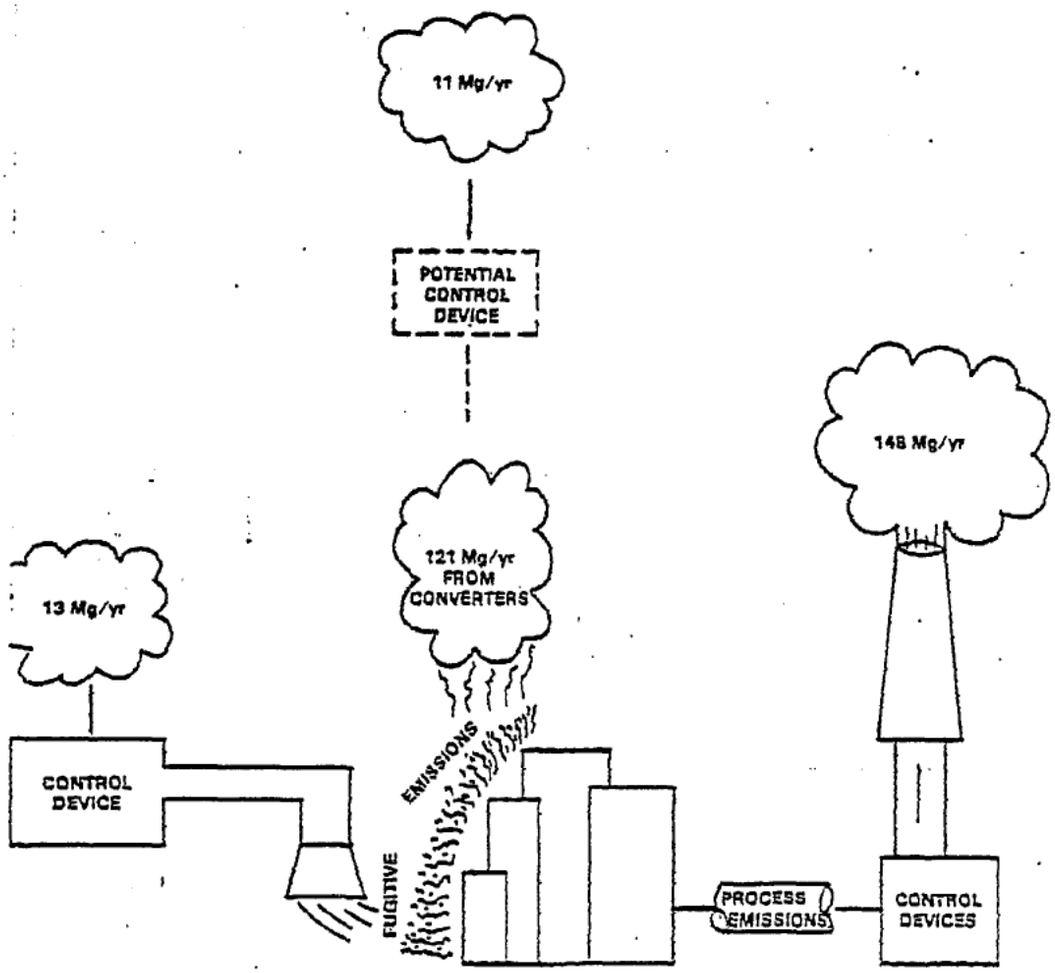


Primary Copper Smelter

EMISSIONS FROM ASARCO/TACOMA



COPPER CONVERTER OPERATIONS

United States
Environmental Protection Agency
Region X (M/S 605)
1200 Sixth Avenue
Seattle, WA 98101

Environmental Information

August 1983

The date for the Tacoma public hearing on EPA's proposed air pollution emission standards for arsenic from the ASARCO smelter, originally scheduled for August 30, has been changed. The new date:

9 a.m.
Wednesday, November 2
(and, if necessary, the same time on November 3)
Rotunda Room
Tacoma Bicentennial Pavillion
1313 Market Street
Tacoma

Because of the change, there has been an extension in the deadline for written comments on the EPA proposal to Saturday, December 10. Comments should be sent (in duplicate if possible) to this address:

Central Docket Section
U.S. Environmental Protection Agency
401 M Street SW
Washington, D.C. 20460

Persons commenting on the proposed standard for the ASARCO smelter in Tacoma are asked to put this notation on the front of the envelope: A-80-40.

It would also be helpful if persons who wish to present oral testimony at the November hearing in Tacoma would notify EPA of their intention by October 26. Please write Laurie Kral, Air Programs Branch (Mail Stop 532), U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle 98101, or call her at 442-1089.

EPA has prepared three fact sheets which summarize EPA's proposal and the estimated health risks associated with the Tacoma smelter's arsenic emissions. These fact sheets are available at the following locations:

-- Swasey, Mottet, Fern Hill, South Tacoma, Moore, McCormick, Kobetich, Municipal Reference and MaIN Branches of Tacoma Public Library

-- Library, University of Puget Sound

-- Lakewood and Peninsula Branches of the Pierce County Library

-- Vashon Island Branch, King County Library

-- Washington State Library, Olympia

-- EPA Office of Public Affairs, 12th Floor, 1200 Sixth Avenue, Seattle

Anyone who needs more information than provided by the fact sheets is encouraged to review the documents from which they were derived. To make arrangements to see these documents, please write Dee Ann Kirkpatrick, Office of Public Affairs (Mail Stop 634), U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle 98101, or call her at 442-1200

#

Environmental Information

FOR RELEASE: TUESDAY, JULY 12, 1983

(202) 382-4355

EPA PROPOSES STANDARDS FOR INORGANIC ARSENIC EMISSIONS

U.S. Environmental Protection Agency Administrator William D. Ruckelshaus today proposed standards intended to reduce industrial emissions of inorganic arsenic, a substance linked to human skin and lung cancer.

EPA estimates inorganic arsenic emissions from significant sources in the U.S. total 1,200 million grams per year. Over 85 percent of these emissions come from the following three source categories: The ASARCO copper smelter in Tacoma, Wash., emits about 282 million grams per year. Fourteen other copper smelters, using lower arsenic content ore, emit 738 million grams per year, and glass manufacturing plants are estimated to emit about 40 million grams annually. All three source categories are to be covered under today's proposal, which would remove approximately 200 million grams of arsenic a year.

While the agency estimates that the standards would reduce total arsenic emissions approximately 20 percent, it was noted that so-called fugitive emissions would be cut by about 65 percent. Fugitive arsenic emissions are those emissions not captured by control equipment to be vented through a stack. They are thought to be the emissions which pose the greatest risk to public health because they are released closer to ground level and have less chance of dispersing before reaching the public.

EPA had listed arsenic as a hazardous substance June 5, 1980, and had been ordered by a U.S. District Court in New York this January to publish a standard by July 11, 1983. Ruckelshaus said that while he could appreciate the concerns of the State of New York and the findings of the court, he nevertheless was disappointed that he did not have more time in which to consider other options to propose.

The standards proposed are open to debate and change. Other control options that are open to comment range from controls which might result in actual closure of the plants to different criteria for the setting of standards. Ruckelshaus stressed he is "eager to hear other suggested approaches to reducing arsenic emissions, including additional technical efforts industry can make."

Under Section 112 of the Clean Air Act, a pollutant is listed as hazardous if EPA finds that it may cause or contribute to, in the Act's words, "an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness."

The listing was based on EPA findings that there is a high probability that inorganic arsenic is carcinogenic (cancer causing) to humans and that there is significant public exposure to the pollutant. Epidemiological studies linking inorganic arsenic to human skin and lung cancer had led the National Cancer Institute, the National Academy of Sciences, and the International Agency for Research and Cancer to conclude that there is strong evidence that the pollutant is carcinogenic to humans. The 1980 listing also signified EPA's intention to establish emission standards for inorganic arsenic under Section 112.

To date, EPA has also listed under Section 112 asbestos, beryllium, mercury, vinyl chloride, benzene and radionuclides as hazardous. Standards have been set for asbestos, beryllium, mercury and vinyl chloride, and standards proposed for the others.

EPA already controls arsenic under its water pollution, drinking water, pesticide and hazardous waste programs. The U.S. Occupational Safety and Health Administration also has rules protecting workers from occupational exposures to this pollutant.

The Clean Air Act calls for standards to be set "at the level which (in the Administrator's) judgment provides an ample margin of safety to protect the public health." Since inorganic arsenic, like most carcinogens, is believed by most scientists to present risks at any level of exposure, any emission will present some human health risk. EPA's policy toward such no-threshold pollutants is that sources of the pollutants should be controlled at least to a level that reflects the best control technology available that is economically attainable. EPA is proposing standards today that require the best available technology for controlling arsenic emissions.

Ruckelshaus pointed out that the 81-day public comment period would place heavy emphasis on the citizens of Tacoma. "I feel we must involve them directly because the risk we are describing there is high. In essence, the citizens will have an opportunity to share with EPA their reactions to managing the risks involved. We must ask them if they are willing to accept certain risks associated with exposures to low levels of arsenic," Ruckelshaus said.

The Administrator said he felt such efforts in Tacoma must include "more than public hearings. We must also work to educate them as to the health risks involved and the options available to EPA."

The proposed standards will appear in this week's Federal Register. The public comment period will run through Sept. 30. Two sets of public hearings are scheduled. The first will be held Aug. 23, 24 and 25 in Washington, D.C. The second, to be held in Tacoma Aug. 30 and 31, will address only the proposed standards for the ASARCO smelter in that city.

For information concerning the proposed standards, contact Robert L. Ajax, Standards Development Branch (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone 919/541-5578. See attached fact sheet for more information.

IV-F-11a

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

The workshop which I attended at Wilson High School dealt chiefely with air pollution. I am concerned, also, with the pollution of our water. I did read that arsenic was also seeping into underground water.

I do think that a longer question and answer period would be of value.

The fact of emissions being carried away was mentioned---carried away where--to pollute someone else?

If Asarco is allowed to continue, why can they not use copper ore with a much lower arsenic content?

2. How can we improve the workshop agenda, speeches, discussion, etc.

As I stated in the above paragraph, a longer question and answer period. Many people were not able to be heard. I realize that there is only so much time but this is a very vital issue. Time was used at the conclusion of the meeting for some gentleman to give an evaluation of the meeting. His findings, in my opinion, could be given to those holding the meeting, in private. It was not necessary to take up meeting time which could have been used for input and discussion.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

I agree with the opinion of the physician(TNT, Aug. 22nd) who stated that the population should not be expected to tolerate toxins to protect jobs. In my opinion, even one death is too many.

Mr. Ruckleshaus was involved with the Weyerhaeuser Co. to change environmental regulations here in this state and nationally. Also,as I understand, the Weyerhaeuser Co. has been using its laboratories to test Tacoma water supply. Can we then expect objectivity from the company or Mr. Ruckleshaus? I suggest, therefore that the water should be tested in another laboratory for contamination.

It has also been suggested that if Asarco uses up all the allowable pollution units here in Tacoma, is it not then a hindrance to ~~so~~ full economic growth? Plus being a possible dealer of deadly emissions.

Protecting several hundred jobs to the detriment and unwitting contamination of many more of our people, is in my opinion, the proverbial "not seeing the forest for the trees."

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name: _____

Address: _____

Date: _____

IV - F - 116

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

- MORE FACTS ABOUT ASARCO'S STACK FIRES; FREQUENCY, DURATION, KNOWN COMPOUNDS WHICH ARE DISCHARGED, AND ANY CHANGES IN PATTERN OF POLLUTANT ~~FALLOUT~~ DISPERSAL BECAUSE OF THESE FIRES
- WHAT OTHER POLLUTANTS, ASIDE FROM ARSENIC, ARE DISCHARGED REGULARLY FROM ASARCO? INFORMATION ABOUT ALL KNOWN EFFECTS OF SMELTER PRODUCTION SHOULD BE CONSIDERED IN MAKING FINAL DECISION.

2. How can we improve the workshop agenda, speeches, discussion, etc.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

YES. I URGE MR. RUCKELSHAUS TO STOP PRODUCTION AT ASARCO. THE SMELTER MANAGEMENT & WORKERS ARE JUST TRYING TO MAKE A LIVING; ~~THEY~~ BUT WE SIMPLY CAN'T ALLOW THEM TO CONTINUE POLLUTING OUR DRINKING WATER, AIR, COMMENCEMENT BAY, THE SOIL, BECAUSE THEY ARE TRYING TO SURVIVE ECONOMICALLY. WE MUST FIND OTHER JOBS FOR THESE PEOPLE. DOES THIS PROPOSAL SEEM EXPENSIVE? HOW MUCH WILL ASARCO & EPA COMBINED SPEND IN FUTURE IN TACOMA? (DON'T FORGET SUPERFUND)

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple and mail.

(b) (6)

Name

Addr

Date: 8/18/83 98405

U.S. Environmental Protection Agency
Public Comment Form

IV-F-11c

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

(a) Future arsenic emissions, after the proposed arsenic controls, should be compared to allowable arsenic emissions elsewhere in the U.S. and other countries where controls are applied.
(b) A modest economic and land use study (5 to 10 year projection) should be undertaken to look at the Ruston and smelter area if ASARCO closes

2. How can we improve the workshop agenda, speeches, discussion, etc.

Excellent job by EPA in the handling of public workshop procedures.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

(a) I favor a strong and safe position with regard to providing "an ample margin of safety" relative to allowable arsenic controls
(b) I would like to see evidence that EPA has aggressively looked at scientific studies and arsenic controls outside the U.S.
(c) A planning scenario (per 1b above) would be very helpful to the public in deciding whether "there is life after ASARCO."

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name: (b) (6)

Address: [redacted] Tacoma, Wash. 98407

Date: 8/25/83

U.S. Environmental Protection Agency IV-F-11d
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

ASARCO's real cost to the public.
A better overall picture of ASARCO's pollution & it's effect on peop. & environment. Not just a one issue discussion.

2. How can we improve the workshop agenda, speeches, discussion, etc.

Good format. Maybe more time.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

How can you consider 189 TONs of arsenic per year dumped in my area an ample margin of safety? That quantity makes the question ludicrous. My land has more than enough arsenic in it. NO MORE!!

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name: (b) (6)

Address: (b) (6) Vashon Wash. 9[illegible]

Date: 8-31-83

Notice: If the film image is less clear than this notice, it is due to the quality of the document being filmed.

ADMINISTRATIVE REMOVAL

ASA218

2081

U.S. Environmental Protection Agency
Public Comment Form

IV-F-11e

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

A Concern about eating the veg. + animals raised on Vashon — not just drinking the water & breathing the air.

B. Recent test results & past test results of community on urine tests 1973, 1976, recent / 88. And how many children were re-tested.

2. How can we improve the workshop agenda, speeches, discussion, etc.

Very well organized. Mrs. Andersons charts are not too clear in the back of room.

All charts were indicated by EPA as healthy adults ~~would like to see~~ a good study of all ages + different areas. Vashon — Physicians etc

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

Timing open + waiting. At this point I have some concern. Gardening + not being able to grow veg. is a serious problem. My child was tested in 1976 + I'm waiting for the current urine test, I would like her to have more tests since we have lived 10 years 6/7 miles from the smelter

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name: (b) (6)

Address:

Date: 8/10/83 Burton WA 98013

U.S. Environmental Protection Agency IV-F-11F
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public? Obviously we need exact data on the emission/pollutant count.

2. How can we improve the workshop agenda, speeches, discussion, etc.

I think you did a fine job. The speakers were well prepared. The question period might have been longer.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

Any amount of arsenic is too much. If "Best Available Technology" can't reduce the output of this known carcinogen then the smelter should be closed until "Better" technology brings the level down to a negligible amount.

If the smelter is allowed to stay open (a decisi I would not be happy with) ASARCO should be made to use lower arsenic content ore as well as install and maintain "Best Available Technology", ie., the Swods. I, for one, dont wish any more poison dumped on Tacoma and Vashon Island.

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name: (b) (6)

Address: Tacoma

Date: 8/23/83

(sorry for the delay)

U.S. Environmental Protection Agency
Public Comment Form

IV-F-11g

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

- Why are we being asked to accept a health risk several times greater than other smelter communities, and hundreds of times greater than limits for other mutagenetic pollutants (eg benzene, vinyl chlorides, dioxins)?
- Urinary arsenic levels in the community. (Vashon Island)
- Additive health effects from exposure to all past & present smelter emissions including spills, stack fires and start-ups, latter meteorological curtailment
- Evidence that Vashon is subject mainly to fugitive emissions (per computer model). — Visual observations & the fact that ASARCO/PSAPCA regulate main stack emissions based on ambient levels on Vashon indicate the assumption is seriously in error
- Epidemiological studies on communities exposed to arsenic showing increases in lung cancer:
  1) Buck & Freemont, Lancet, 7/26/75
  2) Metzuesky, Landau, Elliott, EPA, Baltimore pesticide plant, 1976
  3) Newman, et al, Acad. Sci. 271, 1976
  4) Pershagen, et al, Envir. Health Perspectives [redacted] 1977, [redacted] & Aug 1981
  5) Hartley, Milham & Enterline, 1980 Wash. DSH showing 30% excess lung cancer deaths bet 1950-1970 in three census tracts adjacent Tacoma smelter.
  6) Pelisser, Severson, Lee, Uof W & Fred Hutchison Cancer Research, est 1979 showing excess melanoma, bladder, lung, pharnx & larynx & colon cancers in [redacted] areas 3 to 6 miles from smelter.
  7) Buzzy, Hayes, Landrigan, et al, Nationwide Survey of heavy metal absorption in children living in smelter towns, Amer. Journal of Epidemiology, Vol 106 No. 4, 1977

2. How can we improve the workshop agenda, speeches, discussion, etc.

- This was the first time the community could express itself on this matter and we certainly appreciate the opportunity.
- Be sure the person recording the question understands it. It may require some prior education of the recorder.
- Generally, you did a very good job. (thank you.)

3. Are there any other comments you would like to make about the review process or about the proposed arsenic emission standards?

PROCESS:

- EPA opens the door to let high powered public relations firms and corporate funded campaigns to sway public opinion. Ultimately, the result will be a less protected environment.
- By allowing 2,000 people receiving economic benefit from an operation to vote to allow health risks to a small number of families (in example on Vashon Island) who sustain the health risks — is a clear example of where the democratic process is less than perfect.
- The process seems to be a window-dressing for a decision that has already been made.

PROPOSED STANDARDS:

- It seems very suspect that the standards are exactly what ASARCO planned to do anyway. (particularly to allow them to avoid curtailment & realize more production)
- The standard should be based on indicators of public health hazards (eg, urinary arsenics) rather than based on equipment.
- Essentially the alternatives to the proposed standard have been seriously studied.
- The lack of health data is appalling. Where has the EPA been? It's lucky there was a court suit to force the standards or you probably never would have gotten around to it at all.
- ASARCO should be required to smelt only low arsenic ore.

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

- I would rather see the smelter closed than to accept the health risks [redacted] remaining after the proposed standards are implemented.

(b) (6)

Name: [redacted]

Address: [redacted]
Vashon, WA 98070

Date: Aug 18, 1983

I attended the Aug 16th & Aug 18th workshops

IV - F - 11h

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

More information not only about the arsenic levels of pollution but also the cadnium and sulfur which is present in the air & soil - long time effects.

How much harmful material is being dumped into the Sound?

2. How can we improve the workshop agenda, speeches, discussion, etc.

Not so many details of percents - figures - other plants etc.
Stick with the facts of Tacoma Smelter as of NOW and what is already in the soil and what is coming out of the stack NOW.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

Thought the evening went well - could have been a bit more prepared though.

I think not only the arsenic emissions should be considered - also the aesthetic standards should be taken into view too. The beautiful shore of Commencement Bay has been turned into "Scranton, PA."
When Tacoma was a small town, the smelter was "out of town" but now it is a part of the city and a real eye sore. I think this should also be a factor for the EPA - just as an airport has to be moved from the center of town - I think dirty industry should also be moved away.

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

(b) (6)

Name: [redacted]

Address: [redacted] Tacoma

Date: 8/30/83

IV - F - 11;

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

TO BE KEPT ACCURATLY ADVISED ABOUT EVENTS AS THEY PERTAIN TO THE SITUATION IN TACOMA

2. How can we improve the workshop agenda, speeches, discussion, etc.

MORE ACCURATE DATA FOR PRESENTATION

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

A FAIR AND REPRESENTATIVE APPROACH TO A DIFFICULT PROBLEM. MY FULL SUPPORT IS WITH THE E.P.A

All *signed* comment sheets will be entered into the public record. Please hand in this [illegible] and mail.

RECEIVED
AUG 26 1983
AIR PROGRAM BRANCH

(b) (6)

Name (b) (6)

Address (b) (6)

Date: 8-22-83

IV-F-11j

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

2. How can we improve the workshop agenda, speeches, discussion, etc.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

use the money they spent on
so called information meeting & such.
to engineer and remodel the plant

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name (b) (6)

Address

Date: 8-13-15

IV-F-11k

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public process, please tell us:

1. What additional information would be helpful to the public?

[redacted] We need studies; please do studies on existing natural conditions (not force-feeding rats huge doses of arsenic, for instance) - test existing vegetation, etc.

2. How can we improve the workshop agenda, speeches, discussion, etc.

Be better informed - most of our (Hall) groups' questions were not answered by our group leader but by Vashon residents.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

I live w/in the 3-mile radius of ASARCO. (I was born in North Dakota & have lived in New York City, as comparisons). For the past 3 evenings (Aug 8,9,10) at about 6 pm the air becomes white with sulphur dioxide/arsenic. Do it because it's after hours for the control agencies or what? Are they monitored with this in consideration?? We are chased into our house by these emissions quite frequently. Please help us!

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

According to your numbers, every 2 hours Asarco emits enough arsenic to kill everyone in the 2 mi radius, given 30mg = toxic dose.

Name: (b) (6)

Address: [redacted] Vashon

Date: 8-10 (b) (6) [redacted] 98070

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ADMINISTRATIVE REMOVAL

ASA218

2088

U.S. Environmental Protection Agency
Public Comment Form

IV-F-112

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

Anything that is based on facts, not on what you think.

2. How can we improve the workshop agenda, speeches, discussion, etc.

Let the other side state their facts how let the people [illegible]

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

I would like to make sure, that prove that Arsenic emission are indeed harm

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

(b) (6)

Name:

Address:

Date: 8-18-83

IV-F-11m

U.S. Environmental Protection Agency
Public Comment Form

Thank you for attending the workshop this evening. To help us evaluate our workshop and prepare for the next steps in our public review process, please tell us:

1. What additional information would be helpful to the public?

A study of health effects and risk assessments on potential unemployment if Thrasmelter shuts down

2. How can we improve the workshop agenda, speeches, discussion, etc.

3. Are there any other comments you would like to make about the review process *or* about the proposed arsenic emission standards?

All *signed* comment sheets will be entered into the public record. Please hand in this form before you leave this evening, or fold, staple, and mail.

Name: (b) (6)

Address: _____

Date: _____

TACOMA PUBLIC MEETING, August 18, 1983
Questions from Group 2
Recorder: Lori Cohen

1. Why hasn't EPA addressed peripheral impacts of ASARCO, e.g., fishery impacts, Puyallup Tribe treaties, etc?

2. What are PSAPCA negotiations that are going on with ASARCO? Are these for retrofitting of equipment?

3. EPA assumptions for assessing health risks may not be valid--especially the 70-year lifetime risk factor, the "linear relationship", etc.

4. Has EPA worked closely with the American Cancer Society in collecting data on cancer risks? Greater risks come from smoking.

5. Why did EPA choose 70 years as exposure duration to assess health risks when the U.S. population is very mobile?

6. Why isn't anyone from ASARCO, the city, etc. in front (with EPA) answering questions?

7. What other potentially toxic emissions are coming from the smelter? Do these have any cumulative effects with arsenic? What are effects from lead and cadmium?

8. Does EPA have data showing that arsenic causes lung cancer?

9. What does EPA know about health affects which are caused by sulfur dioxide?

10. When were occupational health studies that were quoted in the slides conducted? Who did the studies?

11. 30 micrograms of arsenic emissions were shown in the slides. Where are these emissions coming from? Where did EPA get the data? Has monitoring been conducted to get the numbers?

12. A major assumption being made by EPA is that airborne arsenic is the greatest risk from arsenic emitted by the ASARCO smelter. What is the basis for eliminating ingestion from the health risk assessment, especially with prevailing winds that will cause arsenic deposition on soil and possibly contaminate vegetables and drinking water in the area?

13. Does chelation therapy reduce contamination from arsenic?

14. Where does monitoring data come from? (If it comes from ASARCO, it is inaccurate.)

15. Early morning emissions are evident from stack. Which government agency is in control?

16. Why haven't the two community health studies of lung cancer in Tacoma area been cited/or used by EPA? EPA data is based on estimates; not facts collected from population.

17. If community/population studies do not show higher levels of cancer, why do you (EPA) think your estimates are better?

18. At this point in time, is ASARCO in violation of any clean air requirement? If so, why are they allowed to operate? Why is EPA spending taxpayers money for this process if ASARCO is not violating any law?

19. Smelter emits various pollutants; commentor has concerns about all of these. Is EPA only dealing with arsenic in the air?

20. Under the new standard, how will monitoring be handled?

21. Who will conduct these monitoring activities?

22. Ajax said tall stack emissions do not have effects at ground level. EPA wants to control converter emissions which EPA said has no ground level effects and that "other" ground level sources cause most problems. Is this true? What is EPA doing about the other (fugitive) emissions?

23. Linear functions were used by EPA to extrapolate occupational health data. Is it true that geometric models are used to estimate risk? Why?

24. What was amount of arsenic previously emitted by smelter (10-40 years ago) and what effects has this had on the population? (Commentor cited potential to emit as being very high, particularly in the past and questioned why health affects on population cannot be seen in population from these high levels. Confused over potential to emit vs. actual and controlled emissions.)

25. Are there any other respiratory effects, other than lung cancer, caused by arsenic inhalation?

26. Have studies been done to look at occupational health hazards--how has lung cancer been singled out as cause? Have studies covered periods of time over 10-40 years with workers at smelter to obtain lung cancer data?

27. Arsenic has many other effects than lung cancer, particularly on children. Have any studies been conducted on children in Tacoma to identify these health problems?

28. Have there been any studies of how to clean-up arsenic in the community? Is there a schedule for completion of these?

29. Does inorganic arsenic accumulate in the body?

30. EPA says occupational health studies are "good data". Where is data from? Were people hired by ASARCO to do the studies?

31. Were personal habits (e.g., smoking) taken into account in the risk assessment studies?

32. RCRA allows application of sewage sludge with cadmium in it. Are cadmium emissions from smelter higher or lower levels?

33. Is there anywhere to send soil samples for analysis?
Health Dept: 593-4750.

34. Where do emission numbers come from--estimates or measured amount? Has Ruckelshaus asked for all numbers to be verified? Will EPA release new data before November hearing?

35. How can EPA tell what causes cancer?

36. Does EPA plan to have more public meetings?

37. How often does "poor dispersion" occur?

38. Lots of assumptions in EPA data; are any numbers <u>actual</u> numbers?

8/18/83 Public Workshop - Arsenic
Group 2
Recorder George Abel

1. How does the risk with ASARCO compare with other smelters? What are the risk numbers, compared with water path?

2. Stackfires - will new controls prevent them? Stackfires - impact on car paint and lungs if breathed?

3. Jobs - protect public health and environment - 189 T won't protect health. What then will EPA do?

4. Are we getting acid rain from the SO_2 emissions?

5. Any other plant events that result in "greater than normal" amounts of arsenic, cadmium?

6. Are you concerned about stack emissions or other release points? Clouds of emissions every night. Plant manager - explained ICS system.

7. Stack emissions have effect on throat - straight down from stack if no wind. Happens after inspectors go home.

8. When was arsenic exposure study done on ASARCO workers? Other studies were done in Tacoma, why not used? Did you go into studies just looking for cancer risk?

9. Not sure Washington studies were "longitudinal" followed over many years? Placement of monitors through checking meteorological data can cause monitors not to record maximum arsenic levels. In risk management slide, implication is that not all arsenic will be eliminated. If so will EPA do continuous health monitoring of people who are still being exposed (to lower levels)?

10. Worse than CO from cars?

11. Are the five stacks still operating? Will stack ever be taken down - high residual in stack of arsenic?

12. Is there a copper smelting process that doesn't emit arsenic or other pollutants?

13. Any data available on triradogneic effects of arsenic emissions on pregnant women and breast feeding women? Comment - Who says no effects to seventh generation?

14. Does arsenic build up in the body with continuous exposure? What is the half-life in the body?

15. Data on effects short of death?

16. Explain cost-benefit decision that will be made. Only deaths or include increased health costs, etc.

17. Will we consider the impact of us having to rely on other countries for arsenic?

18. No threshold level for arsenic effects - is this supported by health studies? What confidence in our assumptions? Do we assume same population distribution for full 70 year period?

19. Is it possible to concentrate ore at mine before the ore gets to the smelter?

20. Concern about amount of known information EPA and other agencies do not know about. (Specific - reservoir study)

21. Original EPA proposal - based on company estimates, if so why? If so will EPA be setting up its own monitoring system?

22. Combined risks mercury, arsenic, other media - con Ruckleshaus consider combined risks in making his decision?

23. PSAPCA enforces CAA? Board of Governor, lack of will to enforce SO_2. Will same happen if new arsenic standard is set?

24. Heavy metal level study in children in Ruston? Results? Cadmium, Pb, Arsenic.

25. Lived in area 15-20 years - children show no arsenic.

26. Superfund studies of Ruston residents. Misleading to only refer to it as a "Ruston" study.

27. Has EPA considered economic impacts on homes, land, ability to sell, etc?

28. Who's going to pay for folow-up health effects studies on residents, check-ups, analyses, etc? Is EPA committed to do this?

29. Any animal studies of low levels of arsenic?

30. How were risk figures determined and were epidemiological studies considered? Did studies determine whether deaths were from arsenic - cancer?

31. Were 1/100 risk levels ever approved by the EPA?

Audio tapes of the proceedings of the workshop held in Tacoma on August 18, 1983

Originals of the tapes are maintained in the docket in Washington, DC